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## Eco-Maps: A Systems Tool for Family Physicians

### SUMMARY

Family physicians are often faced with multi-factorial problems which are difficult to understand and document. Patients are not isolated beings; rather, they are participants in environmental systems. Recognizing this, the assessment of patients using a linear reductionist approach is limiting and incomplete. A systems approach, on the other hand, is congruent with the dynamic nature of the individual and the task. The Eco-map is a pictorial representation of the elements of a patient's environment and of the nature and quality of the interactions between those elements. Examples of the construction and usefulness of Eco-maps are given. (*Can Fam Physician* 1987; 33:172-177.)

### SOMMAIRE

Les médecins de famille sont souvent confrontés à des problèmes multifactoriels qui sont difficiles à comprendre et à documenter. Les patients ne sont pas des êtres isolés; ce sont plutôt des participants à des systèmes environnementaux. Reconnaissant ce fait, l'évaluation des patients par le biais de l'approche réductionniste linéaire est limitative et incomplète. D'un autre côté, une approche par systèmes est conforme à la nature dynamique de l'individu et de la tâche à accomplir. La carte « Eco » est la représentation illustrée des éléments qui constituent l'environnement du patient de même que la nature et la qualité des interactions entre ces différents éléments. L'article présente des exemples de la construction et de l'utilité de ces cartes « Eco ».

**Key words:** Eco-map, environment, patient assessment, systems approach

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**T**HE FAMILY PHYSICIAN is often faced with patients whose

presenting concern proves to be "complicated": multi-factorial, vague, confusing, and even contradictory. Initial exploration may seem to confirm this impression, and further attempts at clarification can lead from bad to worse. Before long the physician may feel as trapped as the patient in a morass of seemingly conflicting, inconsistent, and insoluble information and problems. Often present is an unsettling sense of undercurrents; of unspoken, tenuous or missing connections; and of gaps or missing pieces. Not all family physicians have the time, interest or capability needed to help the patient understand and deal with such problems; however, all practitioners are faced with this type

of situation from time to time. The challenge is to be able to form an accurate picture of the overall situation, one that is accepted by both the physician and the patient, in order to develop a comprehensive assessment and proceed with appropriate therapy or referral.

Faced with assessing a patient with a "complicated" problem, the physician must collect, organize, and appreciate the significance of the data put forth by the patient, and determine how the facts are connected. The patient, being part of a system or environment which comprises many elements, individuals and settings, interacts with others in this environment in a dynamic way. While it is easy

enough to record the elements of the patient's environment, the challenge is to understand and document the dynamic nature of the connections within this environment. Traditional medical information gathering tends to be linear and reductionist, attempting to link data in a cause-and-effect manner. The ultimate goal is to determine a cause for the problem and devise a plan for treatment which will correct it. In many circumstances, for example when there is no organic basis for the patient's concern or when there is more than one individual involved, the linear reductionist approach lets us down. Conventional attempts to record this information from the patient usually result in the physician's interpretation of something that the patient had difficulty putting into words in the first place, creating the potential for misinterpretations at each stage of the process. Collecting, organizing, and appreciating information in this manner can be an overpowering and time-consuming task for the physician with a tight schedule and a traditional approach to

patient problems. However, the use of a simple systems approach to this type of situation can dramatically streamline the development of a sound understanding of a complicated problem. This article will describe a systems-based format for managing such situations, a format which has proved versatile in the authors' experience, and which could easily be used by most family physicians.

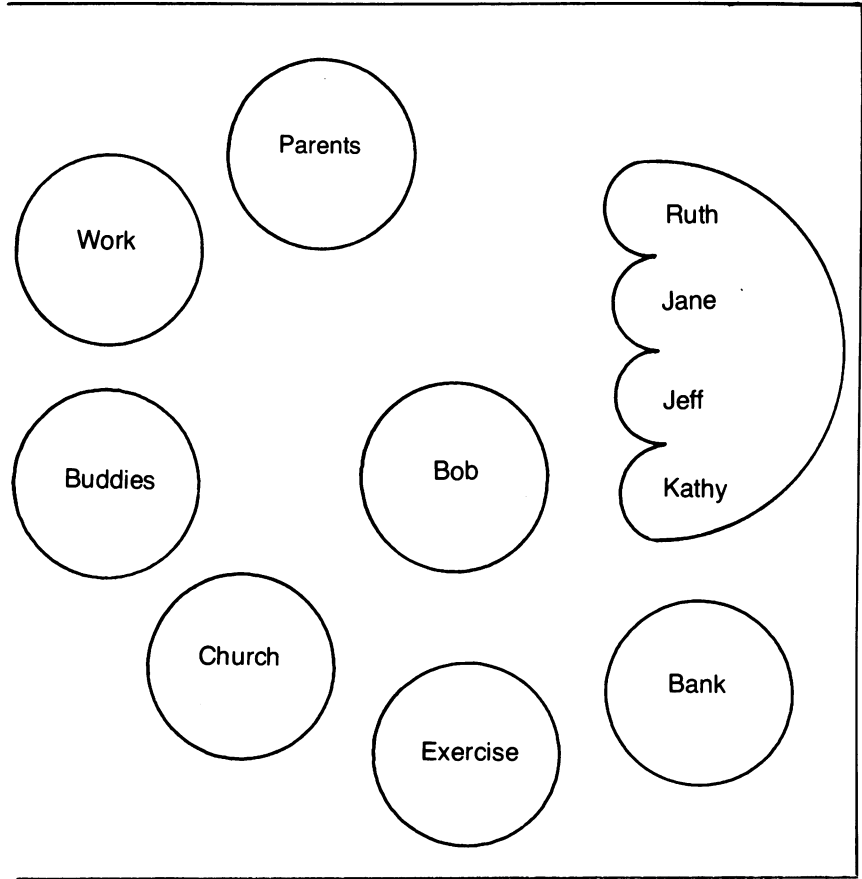
The ecological map or 'Eco-map' is a pictorial assessment tool that facilitates the visualization and understanding of an individual, family or group in their environmental context. It allows us to view at once all the elements, their interactions and connections. The degree of integration between the elements, the contrasts between them, and the balance and reciprocal nature of their exchanges come into focus. The Eco-map, in contrast to the linear reductionist approach, characterizes an interactive whole rather than a sequence of parts. The resulting picture can be shared by the physician and the patient and give form to an otherwise overwhelming

mix of details. In using the Eco-map, the physician sees the patient not as an isolated entity, but as part of a complex ecological system. Eco-maps highlight the supports and the conflicts, the flow of energy either to or from the patient, and the quality of interactions. They are also useful in depicting connections to be established or revised and resources to be developed or enhanced.

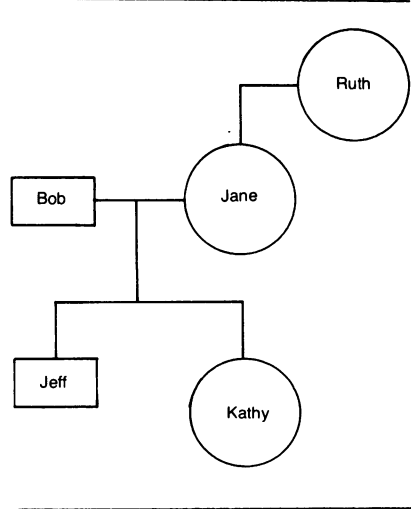
The pertinent elements of the patient's environment are committed to paper. Attention is centred on the connections between these elements: how open or closed each element is to the other's influence; the sources of nurturance, stimulation and support; the flow of resources. Since each of these elements has a life of its own apart from the other elements in the patient's environment, each is concerned with ensuring its own survival and growth within the larger network. Every interaction has an impact on *both* elements. The willingness of both elements to participate in an exchange is determined by the effect this will have on each element. Will this connection enhance each element's continued existence and growth? If the potential for benefit can be realized, what steps are required to ensure that this takes place? Each element must be able to access the present and potential resources of others and to manage the others' demands. Are the social, relationship and instrumental skills present to make this happen?

When examining the flow of resources or the personal energy re-

**Figure 1**  
**Bob's Initial Eco-map**



**Figure 2**  
**Bob's Household**



quired to maintain the connections between the elements, certain questions come to mind. Are there breaks or fluctuations in this flow? How much energy is expended by each element to maintain the connections? How much energy is regained as a result of the connection? Does this exchange come easily or is it fraught with conflict? Answering these questions can draw attention to options which have not been previously apparent, explain reasons for missing or tenuous connections, and indicate how open or closed each element is to the input of others. For example, if the energy consumed in maintaining a connection outweighs the perceived benefit, the value of the connection may be questioned. The flow of energy may simply sustain the elements without promoting growth, in which case the energy could be redirected to connections which are more challenging. By viewing the manner in which the connections are formed and maintained, the interdependency of the elements and the mechanisms by which needs are met is clarified.

For any family physician who has patients with multi-factorial concerns, the usefulness of this tool is readily apparent. In a practical sense, the visual impact of the Eco-map can stimulate more active participation by the patient in the process of information

gathering and recording. As the picture develops before the patient's eyes (s)he becomes actively involved in making sure the details are correct. The process of developing an Eco-map results in less defensiveness or blaming, as the focus is on the *dynamics* rather than on the *content* of the behaviour.

By mapping the effects of change, Eco-maps can be employed to compare past, present and future. Events which have occurred or are expected to occur can be mapped in the present to facilitate greater understanding and acceptance of past or anticipated changes. Conversely, changes which evolve over time can be measured by comparing consecutive Eco-maps. Planning where and how to intervene is facilitated because the circular nature and reciprocal impact of any interventive action taken can be more fully appreciated. The patient's ability to retain a sense of personal integration as well as balance with his/her environment can be visualized and understood in this context. Both the patient and the physician can develop an increased understanding and acceptance of the system in which the patient lives.

Many 'aids' to medical practice are complicated and require special forms or skills to complete, but the Eco-map is simple to develop and uses only a few basic means of recording informa-

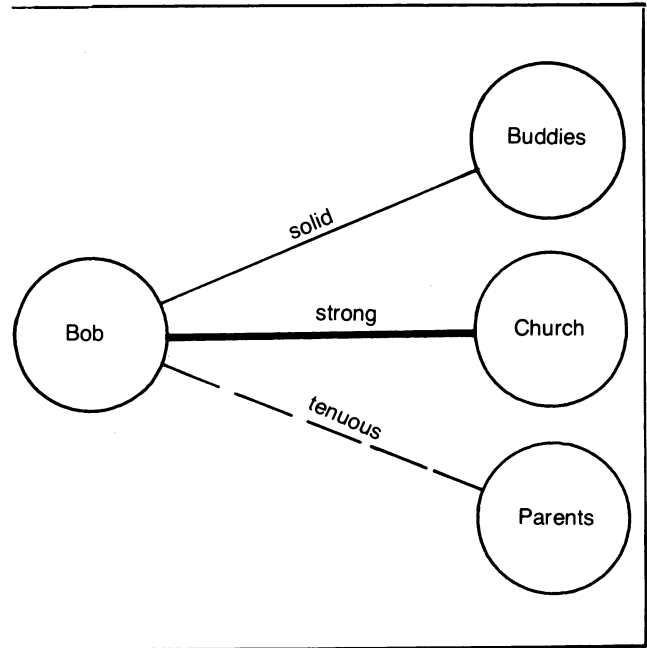
tion. The basic construction of the Eco-map is best illustrated by using an individual case as an example.

Bob is a 34-year-old department manager in a large automotive supplies store. He presents with symptoms of a duodenal ulcer and admits to feeling 'pressured' and frustrated. After dealing appropriately with the physical component of this complaint, the patient and the physician decide to pursue the reasons for these symptoms. An Eco-map is used to record the information, to derive a clear understanding of the situation for both the patient and the physician, and to develop some practical ideas for addressing the issues that are identified.

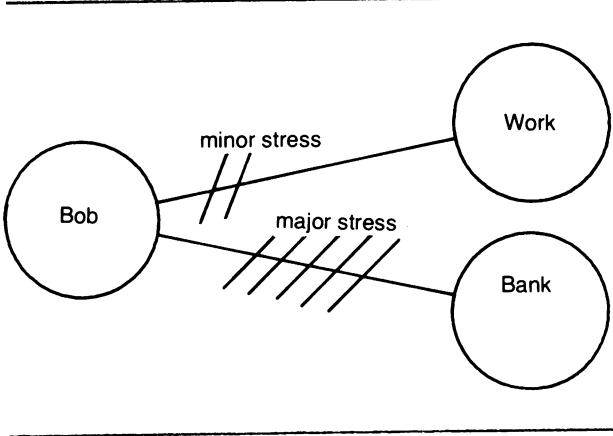
The presenting individual is represented in the center circle, and other components of his social environment are clustered around him. Bob's significant contacts or involvements include the other members of his household, his work, the buddies he gets together with a couple of times a week, his church, his parents, regular exercise, and his bank. These are the major people or activities that occupy his time, consume his energy, and influence his overall behaviour and feelings. The basic elements of Bob's Eco-map are shown in Figure 1.

(In multi-member households, it is often helpful to draw a separate geno-

**Figure 3**  
**Strength of Relationships**



**Figure 4**  
**Stressful Relationships**



gram to depict the *structure* of the relationships within the household. Bob's household is shown in Figure 2.

When the Eco-map focuses *exclusively* on relationships *within* the household, the separate genogram may not be necessary).

The *strength* of the relationships is depicted by the thickness of the line joining the individuals/components: a heavy line denotes a strong connection; a dashed line denotes a tenuous connection. Bob has a good connection with his buddies and is strongly involved with his church, but has a distant and estranged relationship with his parents. This is depicted in Figure 3.

*Stress or conflict* in the relationship is represented by hatched lines. Bob has little difficulty getting along with his boss but worries a lot about his loan at the bank. This is demonstrated in Figure 4.

*Energy flow* in the relationships is depicted by arrows, one representing how much energy is expended into the relationship, the other denoting the benefit derived from it. Bob and his wife have developed a relationship which is very solid and supportive for both of them. This is represented in Figure 5.

Note that Bob feels that he doesn't have to put a lot of energy into this relationship but that he gets a lot out of it. If the discussion were to focus on Jane, she too might feel that she derives a lot of support from her relationship with Bob with relatively little effort. This illustrates an apparent resource for Bob: a relationship which costs him less than the benefit he derives. On the other hand, Bob puts a fair amount of energy into his relationship with his mother-in-law, driving her around, appeasing her, and acting

as an intermediary in her relationship with his children, and yet he senses little thanks or warmth in return. This is shown in Figure 6.

This relationship is a drain on Bob's energy. There is no indicated or implicit judgement about this, only recognition that this is how Bob perceives the relationship.

The Eco-map below incorporates the features discussed so far in this example and "fills in the blanks" for the rest. Without discussing the rest, it is easy to get a clear picture of the nature of Bob's relationships, their strengths, the sources of conflict, the sources of energy, and the drains on his energy. An attempt to describe all these features in words would take much more time and space and would not permit a ready depiction of the components of Bob's environment, the nature and quality of the interactions, and energy flows. Bob's final Eco-map appears in Figure 7.

It is easy to identify that the major factors that may be contributing to Bob's ulcer symptoms and feelings of pressure and frustration are, in descending order of importance, his bank loan, his mother-in-law, and his job, specifically his relationship with his employer. Major resources for him are his wife and his church. Bob may feel a considerable degree of relief at having all these factors identified and quantified. This perception may be therapeutic in itself, or it may be all Bob needs to enable him to make changes which would reduce some of his pressures and augment his resources. It may also enable the physician to make some helpful suggestions: that he restructure his bank loan, for example, or discuss and possibly resolve his difficulties with his employer. The situation with his mother-in-law may not be conducive to change; if it is not, he may be able

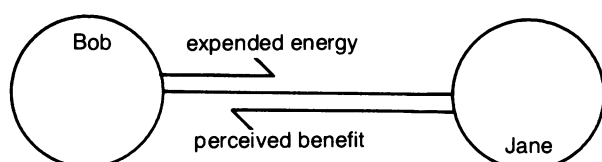
simply to accept this. The effect of various interventions and their possible impact on the rest of the environment can also be predicted from having the overall picture at hand. Counter-productive changes that might upset other stable or beneficial relationships may be prevented.

In contrast to this first Eco-map, which concentrates on the relationship of an individual to his broader environment, the Eco-map may focus on the relationships among household members. Feelings about, or changes in, the connections between family members can be explored, drawing attention to the influence of each member's family roles or responsibilities and life cycle position (i.e., adult or child). Different perspectives of the same system are gained when more than one family member is invited to participate. The following patient encounter illustrates this contrast.

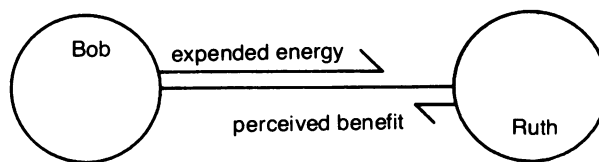
Jan, a 26-year-old mother, presented to the physician with her nine-year-old daughter, Lynn, seeking help in responding to Lynn's hostile withdrawn behaviour. Lynn's father had been invited to participate with his wife and daughter in this meeting, but had refused. Lynn's withdrawn behaviour had affected her school performance, as well as her ability to relate to her classmates and teachers. She had no friends and, other than through "angry" looks, was unresponsive to her mother's attempts to uncover the reasons for her unhappiness.

From past contacts with this family the physician knew that Jan had given birth to Lynn, out of wedlock, at age 17. Financially sustained by social assistance, she had raised Lynn for the first two years with no family supports. Since that time she had changed provinces, up-graded her education, found employment, and subsequently married Lynn's natural father, moving back with him to her province of origin, where she gave birth to their sec-

**Figure 5**  
**Energy Flow: Supportive Relationships**



**Figure 6**  
**Energy Flow: Non-Supportive Relationships**



ond child, now two years of age. At the time of the meeting, Jan was employed in a well-paid responsible position and was continuing to further her education through night courses taken twice a week at a local community college.

At first the physician's attempts to establish rapport with Lynn proved no more successful than Jan's. Lynn remained silent, slumped down in her chair, holding her mother's purse in front of her face. The decision to use an Eco-map was made when Lynn revealed an interest in art. Jan and Lynn were each invited to draw pictures of their family to aid the physician in understanding their feelings about life in that family. It was emphasized that the connections drawn between family members were not indicative of how much each member loved another, but of how emotionally close they felt to one another, and how much effort was expended to maintain that closeness. The physician was curious about the effects of the changes in the family's structure since Lynn's birth, and about how Jan and Lynn would represent their connections to the other family members. Therefore, the physician asked them to indicate on their Eco-maps the family connections before and after the birth of the second child, David. Sometimes the nature and quality of the connections is variable, and they can be represented by using more than one line to characterize the situation.

On viewing the completed Eco-maps, the impact of David's birth on the connections between family members was readily apparent, as were the similarities and differences in how Jan and Lynn perceived the same connections. Lynn represented her connection to her father prior to David's birth by a thin line, a line that was present despite a perceived absence of energy put forth by either person to maintain the relationship (see Figure 8). Subsequent to David's birth the connection between Lynn and her father is missing, while a strong connection is drawn from the father to David (see Figure 9). Jan's depiction of the same connection is similar, with two notable exceptions. Where Lynn perceives an absence of effort expended, Jan sees an equal exchange of energy put into the upkeep of the connection between Lynn and her father prior to David's birth (see Figure 8). Following this event, Lynn's map por-

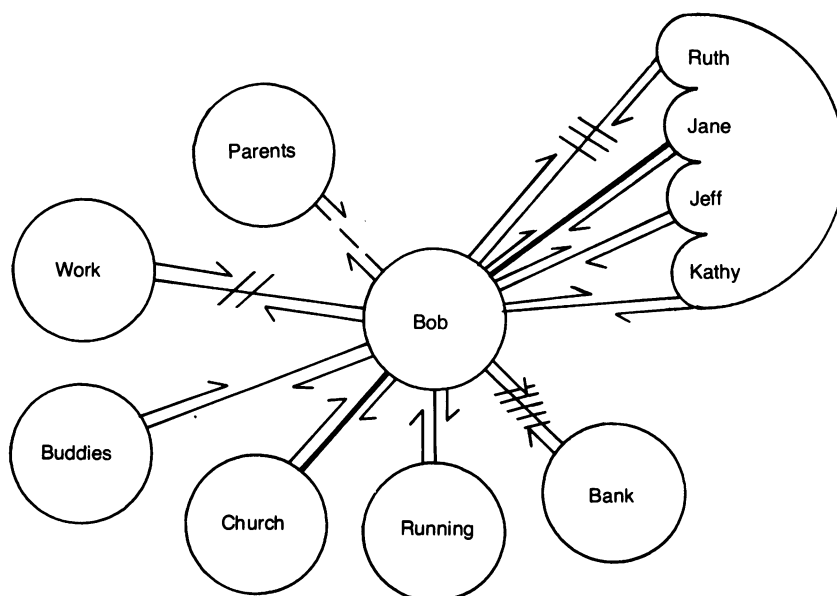
trays the absence of a connection between herself and her father, whereas Jan's map shows a solid connection between the two, although the strength of the connection is variable (see Figure 9). Lynn's connection with her mother changes from a strong connection, one that Lynn works hard to preserve with some response from her mother, to one that is fragmented, with neither person putting out any energy towards its upkeep (see Figures 8 and 9). Jan's map supports Lynn's representation of the connection between them prior to David's arrival as strong, but sees herself as meeting her daughter more than halfway in expending energy to remain emotionally close to Lynn (see Figure 8). Jan also perceives more fluctuation in Lynn's efforts to secure this closeness than does Lynn.

Lynn's perception of her parents' relationship before David's birth closely resembles her mother's; however, Jan sees the connection as varying from strong to tenuous, whereas Lynn sees the connection as being either solid or strong (see Figure 8). This may indicate that Jan perceives less stability in her connection with her husband than does her daughter. Following David's birth, Lynn and Jan's representation of the connection coincide (see Figure 9). Finally, Lynn has

drawn a strong connection to a friend made while living in the other province, emphasizing on her map that this person is her only friend (see Figure 8). Some of Lynn's anger could be connected to the family's move, which occurred just before David's birth and which separated her from this friend.

When observing Jan and Lynn's maps in total, lines illustrating the expenditure of energy needed to maintain the connections, with the exception of those shown between Jan and her husband, were noticeably absent from the maps picturing the family's connections after David's birth (see Figures 8 and 9). Connections with extended family members shown on the first set of maps were also missing from the second set of maps. The absence of the energy lines may mean that more energy is going into the tasks of daily survival (food, clothing, shelter) than is being expended to meet the emotional needs of family members. Individual family members may, in fact, feel emotionally isolated from one another. The missing connections with extended family on the second set of maps could indicate a deterioration in these relationships over time, or it could signal that the family's energies are more focused on keeping the immediate family connected. It is appar-

**Figure 7**  
**Bob's Final Eco-map**





ent that Lynn sees herself as less emotionally connected to her parents since her brother's arrival.

When these observations were used to shape the physician's inquiry, Jan disclosed that her relationship with her husband had improved when he stopped abusing alcohol one year after David's birth. Jan's coupling of the strong connection with the fragmented line on her first map now becomes clearer. The absence of energy lines on the second set of maps spawns questions about the day-to-day functioning of the home. Here Jan discloses that in addition to working full time outside the home and attending college courses twice a week, she carries complete responsibility for meal preparation and housework, and is the primary care giver for the children. (Her hus-

band "helps with" but does not "share" child-care responsibilities with his wife.) In her efforts to manage these varied responsibilities, Jan admits to feeling physically and emotionally depleted frequently. Much of the energy left to meet the children's demands for emotional and physical closeness is given to David who, at two years of age, depends on his parents to meet most of his needs. Lynn, because she is older, is able to dress and feed herself, and assumes more responsibility in caring for the home and her younger brother. Jan admits to having more negative interactions with Lynn than positive ones; she attributes this to a need to "get things done" to maintain the daily operation of the home, and to Lynn's hostile, withdrawn responses

to Jan's requests for assistance. Jan appears to have few opportunities in her busy schedule to meet her own needs for individual relaxation or to share leisure-time activities with her children individually or together. As Lynn views this situation from her position in the family, it would appear that her parents, in meeting her brother's needs for care, are emotionally closer to him than to her. The conflict evident in Lynn and her mother's interactions could be a confirmation of this perception in Lynn's mind. Lynn's behaviour and Eco-map may be Lynn's way of saying that she feels emotionally isolated from her parents. If this is indeed the situation, Jan may want to increase the number of positive encounters shared with Lynn. Structuring these experiences into an already overloaded schedule may require that Jan's husband share more of the household responsibilities with her. She may choose to enlist the physician's help in approaching this situation, or she may feel confident in managing it without outside assistance. In either case, enough insight into the family dynamics and structure has been gained to suggest possibilities for where and how to intervene.

In summary, the family physician's traditional ways of gathering, organizing and using information can be restrictive and inadequate when dealing with multi-factorial concerns in individuals or households. Patients are not isolated beings; they are connected with other individuals and situations in their environment. The nature and effect of the interactions between the individual and his/her environment is difficult to understand and work with through a linear approach. A systems approach permits many of these difficulties to be overcome. Construction of an Eco-map gives the physician and the patient a common and clear understanding of the dynamic situation in which the patient is living and permits the postulation and evaluation of changes in the system. The Eco-map is an efficient tool which the family physician can use to manage complicated situations with greater efficiency and effectiveness. ●

## References

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Figure 8  
Before David's Birth

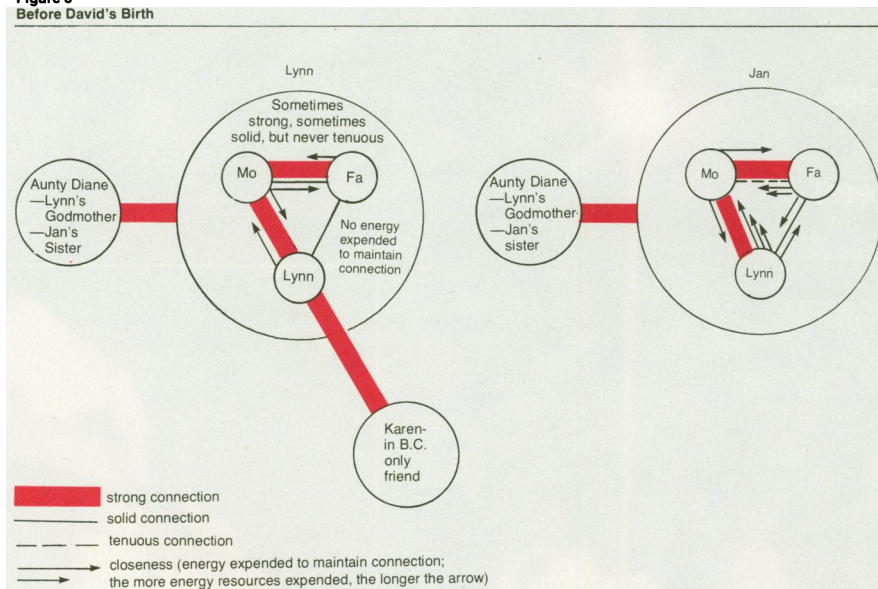


Figure 9  
After David's Birth

